Workshop Manual

Fox 2004 ➤ , Fox 2010 ➤ , Fox 2014 ➤ ,
Gol 1995 ➤ , Gol 1999 ➤ , Gol 2006 ➤ ,
Gol 2009 ➤ , Gol 2013 ➤ , Gol 2017 ➤ ,
Gol 2019 ➤ , Golf 1999 ➤ , Golf 2007 ➤ ,
Golf 2016 ➤ , Golf BR 2018 ➤ ,
Kombi 1997 ➤ , Parati 1999 ➤ ,
Parati 2006 ➤ , Polo 2003 ➤ ,
Polo 2007 ➤ , Polo 2012 ➤ ,
Polo BR 2018 ➤ , Polo Sedan 2003 ➤ ,
Polo Sedan 2007 ➤ ,
Polo Sedan 2012 ➤ , Santana 1991 ➤ ,
Saveiro 2000 ➤ , Saveiro 2006 ➤ ,
Saveiro 2010 ➤ , Saveiro 2014 ➤ ,
Saveiro 2017 ➤ , SpaceFox 2006 ➤ ,
SpaceFox 2011 ➤ , T-Cross BR 2020 ➤ ,
Virtus BR 2018 ➤ , Voyage 2009 ➤ ,
Voyage 2013 ➤ , Voyage 2017 ➤ ,
Voyage 2019 ➤ , up! 2014 ➤ ,
up! BR 2018 ➤

Body Repair - General Information

Edition 03.2019

List of Workshop Manual Repair Groups

Repair Group
00 - Technical data

Technical information should always be available to the foremen and mechanics, because their careful and constant adherence to the instructions is essential to ensure vehicle road-worthiness and safety. In addition, the normal basic safety precautions for working on motor vehicles must, as a matter of course, be observed.

Contents

00 – Technical data

1 Safety indications

(VRL012845; Edition 03.2019)

1.1 Components removal

Check the vehicle correct positioning on a lift because with the components removal, alters the vehicle weight distribution.

1.2 Battery, work with weld

Note

Before disconnecting the battery check if radio code is present. Prior to vehicle delivery to the customer the radio should be coded.

Before the work with welding is essential disconnect the battery cables and cover the poles.

Before the work that produce sparks near the battery is essential to remove the battery from the vehicle.

WARNING

Before you connect the battery, turn on the ignition!

When connecting the battery, make sure that no one is inside the vehicle!

1.3 Electronic control units

When connecting the mass the welding equipment, look for it to be fixed directly to the component to be welded. Observe that point between the equipment mass and the welding area there is no insulating component.

Avoid electronic control units and electric grids come in contact with mass connection or with the welding electrode.

1.3.1 Procedures with electronic control units after bodywork repairs

The replacement of electronic control units a bodywork repair is only necessary when at least one of the following conditions is met:

- Housing is visibly deformed or damaged.
- The support surface and the console are deformed, externally the unit presents no harm.
- Connector is damaged or corroded by moisture.
- The function test and the self-diagnostics of the unit presents failure: "Control unit failure".

If in the bodywork, electronic components, for example: ABS control units, are removed and then reused, they should be tested for correct operation after installation, for example: using the vehicle self-diagnosis V.A.S.

1.4 Paint, glasses, stuffing, linings

In locations used for body repair, no other vehicles may be parked without protection (fire hazard by sparks, damage to batteries, paint, and window glasses).

1.5 Fuel tank or fuel line

In the grinding and welding work in areas near the reservoir or hoses and fuel filters is required special attention. In case of doubt, such components must be removed.

1.6 Air conditioning system

In pressurized components of the air conditioning should never be done any welding, tin solder or brass solder. This also serves to welding work on the vehicle when there is the danger of air conditioning components being heated. In relation to a paint repair cannot occur individual temperatures of objects at least 80° C in oven or in a preheating zone because there is a heating due to the strong pressure increase in the installation and could explode.

Note

Draining the refrigerant circuit is also required when welding must be performed in the vicinity of the refrigerant hoses. During welding, invisible ultraviolet radiations are released, which penetrate the cooling gas hoses and decomposes them.

1.6.1 Solution:

Draining the coolant circuit ⇒ Air conditioning; Rep. gr. 87 ; Heating and air conditioning; Drain the coolant circuit with the set for recovery, recycling and recharging of the air conditioner VAS 6008 .

Drain air conditioning can only be transported by technical assistance workshop. For that the installation should only be drained when required security measures.

If in the repair of the vehicle is necessary to drain the cooling gas circuit, then all contact with the liquid cooling gas or vapours must be avoided!

Protect hands with rubber gloves and your eyes with goggles! Through intensive action of cooling gas on the unprotected parts of the body may occur freezes.

WARNING

It is recommended to keep ready a bowl of water for rinsing eyes. If the coolant liquid reached your eyes, they should be washed with water for about 15 minutes.

Apply eye drops and immediately seek medical advice even if your eyes does not hurt. The doctor must be informed that the freeze was caused by the R134a coolant.

It also should be noted safety measures against coolant other parts of the body, as should be washed immediately with cold water for at least 15 minutes.

Although the coolant is not flammable, smoking is not allowed in the place where you are using the cooling gas. Due to the high temperatures of a burning cigarette, the cooling gas dissociates

itself. Inhalation of toxic products of dissociation resulting in irritation causing cough and nausea.

1.7 Airbag System - Safety measures to work

> WARNING
>
> *Before starting any repair on the Airbag, disconnect the earth cable from the Battery - A- ⇒ Electric equipment; Rep. gr. 27 ; Starter, alternator, battery .*
>
> *After disconnecting the earth wire from the Battery - A- it is not necessary to wait to start the repairs.*

> Caution
>
> *When connecting the earth wire of the vehicle Battery - A- , no one should remain in the vehicle's passenger compartment.*

Note

- *Check whether the vehicle has a coded radio, if so, request the anti-theft coding before disconnecting the earth cable from the Battery - A-.*
- *Upon reconnecting the Battery - A- , check the vehicle equipment (radio, clock, power locks and windows, etc.) according to the Operations Manual and/or instructions for use.*

- Checking, assembly and repair works should only be made by specialized personnel.
- Before handling (touching) the airbag triggering device, the mechanic should unload his electrostatic charge. This is made by touching grounded metallic pieces, such as: water pipes, heating tubes or metallic beams.
- The airbag trigger installation should be made immediately after they are removed from its transport package.
- When work is interrupted, the airbag triggering device should be returned to its transport package.
- It is forbidden leaving the airbag triggers device in a place without care.
- The removed airbag triggers devices should be stored so that the cushioned side be turned upwards.
- The airbag triggers device that fall on a hard surface or presents damages cannot be installed again.
- Not triggered airbag triggers should be identified and returned to the manufacturer to be eliminated (use the airbag triggers shipping package).
- The storage and shipping should be in compliance with the legislation for explosive materials.

The airbag components may not be displayed even for a short time to temperatures above 100 ° C.

Airbag Components may not come into contact with grease, cleaners, oil or similar.

Airbag damaged components must be replaced. ⇒ Disposal Instructions Chapter on page.

After contacting the detonated Airbag unit, wash your hands!

1.8 Airbag triggers after an accident - which should be replaced

1.8.1 Accident with Airbag triggering

The following components should always be replaced:

- All the triggered airbag triggers with their control units and sensors.
- Supports of the Triggering device 1 for the front passenger airbag - N131- .
- Airbag coil connector and return spring with sliding ring - F138- .

Visual inspection - replace if necessary:

- All the damaged components.

Note

After the repair, even if the Airbag control lamp - K75- does not indicate any failure, the record of defects regarding Airbag components must be verified with the help of the Diagnosis, Measuring and Information System - VAS 5052A- or later equipment.

1.8.2 Accident without airbag triggering

Note

Even if the Airbag control lamp - K75- does not indicate any failure, the airbag component damage memory must be checked, using the Diagnosis, Measurement, and Information System - VAS 5051A/52- .

Items that should be checked:

- Airbag control lamp - K75-
- Driver side airbag igniter - N95-
- Front passenger side airbag igniter 1 - N131-
- Driver/passenger side airbag trigger - N199 / N200-
- Airbag control unit - J234-
- Front and rear safety belts, as well as the mooring points of the children's seat (ISOFIX).

1.9 Verification of safety belts

WARNING

Whenever an accident happens, it is necessary to carry out a systematic inspection of the seat belt system! If a fault is verified based on checkpoints, the customer should be alerted to the need of replacing the belts.

Points to check:

- Check the belt strap ⇒ page 5
- Check the automatic retractor (blocking effect) ⇒ page 6
- Visual inspection of the belt latch ⇒ page 6
- Check the belt latch operation ⇒ page 6
- Check the belt guides and the latch tab ⇒ page 7
- Check the fastening parts and fastening points ⇒ page 7

Note

If the customer refuses to replace a damaged seat belt, should be made a note of this refusal. in the Terms of Service.

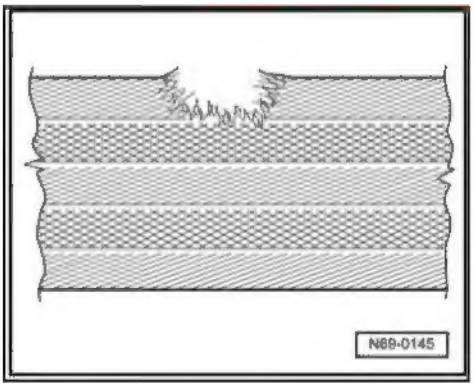
1.9.1 Check the belt braid

– Completely remove the belt braid from the automatic rewinder or from the regulating tab of the abdominal belt.

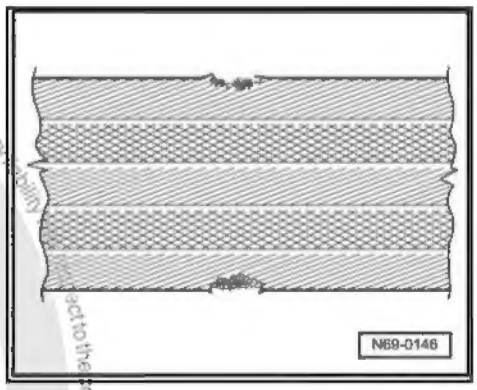
– Check if the braid belt is dirt eventually wash with a mild soap solution.

• If a crashed vehicle is detected one of the following damage (1 and 2) - Replace the full seat belt with their latch.

• If a crashed vehicle is detected damage as in 1, 2, 3, simply replace the damaged seat belt.

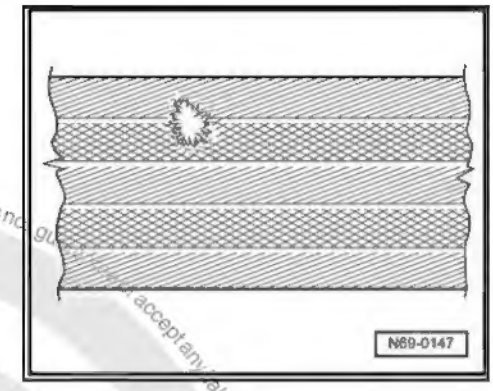


1 - Frayed, torn, cut braid belt.



2 - Torn fabric threads in the belt border.

3 - Marks caused by cigarette burns or similar.



1.9.2 Check the automatic retractor (locking effect)

The automatic retractor has two automatic locking functions.

- The first locking function is activated when the belt is quickly pulled out of the automatic retractor (acceleration of belt unwinding).

Verification

– Pull the braid belt strongly out of the automatic retractor.

- No blocking effect - replace the safety belt complete with their latch.
- In case of damage to the belt braid unwinding or winding device, check first if the position of the automatic retractor was modified.
- The second locking function operates if occurs a change in the vehicle movement sequence (vehicle-dependent locking function).

Verification

– Put the safety belt.

– Accelerate the vehicle to a speed of 20 km / h and brake the vehicle abruptly.

- If, during braking, the blocking system does not work, replace the full safety belt and their latch.

> **WARNING**
>
> *For safety reasons, the test drive should be made in a street without movement, in order to not expose other drivers to danger.*

1.9.3 Visual inspection of the belt latch

– Check the latch for the formation of cracks. If damaged, replace the safety belt.

- If damaged, replace full safety belt and their latch.

1.9.4 Check the operation of the belt latch

Check the belt latch:

– Insert the latch tab until hearing its engaging. Check if latch mechanism is engaged, pulling the braid belt strongly.

- Perform at least 5 checking sequences. If the latch tab does not work even if for a single time, replace the full safety belt with their latch.

Verify the unlocking:

– Press the safety belt, by pressing the belt latch button with a finger.

- Perform at least 5 checking sequences. If the latch tab does not skip even if for a single time, replace the full safety belt with their latch.

> **WARNING**
>
> *Never use lubricants to eliminate any kind of noises or lack of mobility of the safety belt latch button.*

1.9.5 Check the belt guides and the latch tab

The plastic-coated belt guides have thin parallel grooves after a load stress (belt used in the moment of an accident) is exerted on the belt system. (Wearing resulting from frequent use is identified by smooth and scratch less wear marks).

– Check for deformations, cracks or formation of tears in the plastic.

- In case of grooves forming or other damage, replace the full safety belt with its latch.

1.9.6 Check the fastening parts and fastening points

- Deformed latch tab (elongated).
- Belt height adjuster does not work.
- Decentralized fastening points (vehicle seat, support, floor) or with thread damaged.

- If damage components were detected, replace full safety belt with the respective latch.
- Replace the fastening points.

Note

On damage not resulting from an accident, for example in case of wear, it is only necessary to replace the damaged part.

1.10 Safety measures for belt tensioner

- Checking, assembly and repair works should only be made by specialized personnel.
- The pyrotechnic propelling load has no expiration date, i.e., it has unlimited, maintenance-free lifetime
- The tensioner components must never be opened or repaired. Always use new parts.
- Belt tensioner unit that suffered falls can not be installed on vehicles.
- Always replace mechanically damaged safety belt tensioner units (deformities, tears).

- Belt tensioner unit must be installed immediately after being removed from the transport package
- When the work is interrupted, the belt tensioner unit must be returned to the transport package
- It is not allowed to keep the belt tensioner unit without any control
- The belt tensioner unit cannot be handled with lubricant, cleaning products or other similar substances, nor may it be exposed to temperatures above 100° C, even temporarily.

1.11 Vehicles works with belt tensioner

WARNING

Before starting the repair work or alignment you should remove tensioners usage unmarked (trigger lock) fired mechanically In electrically triggered tensioners, battery earth cable must be disconnected.

Note

If the belt braid is fully retracted, the use identification (trip block) prevents activation of the mechanically triggered tensioner in case of accident.

WARNING

During the repair work or alignment, the braid belt can not be pulled in tensioners with use identification. If the separation, alignment, and untie work larger vibrations are caused, then it must be removed from the belt tensioner with the use identification.

Remove and install the tensioner safety belts ⇒ Body - Internal assembly works; Rep. gr. 69 ; Passenger protection; Tensioner safety belts - remove and install

1.12 Repair, alignment and/or bodywork works in vehicles with Airbag

When working in Airbag system and in the alignment works in relation to the body repair the battery earth cable must be disconnected.

WARNING

Before you connect the battery, turn on the ignition!

When connecting the battery, make sure that no one is inside the vehicle!

Repair instructions ⇒ Body - Internal assembly works; Rep. gr 69 ; Passenger protection, Safety measurements to Airbag works .

1.13 Removal of the front seats with side air-bag

WARNING

On removal of the front seats you must note the safety instructions necessarily.

You may find the safety instructions in the Repair Manual of the respective vehicle type. ⇒ Body - Internal assembly works, Rep. gr. 72; Front seats; Front seat - remove and install , using the airbag adapter - VAS 5232/1-

2 Basic instructions

2.1 Accident vehicles diagnosis

On repair of the accident vehicles sometimes the chassis or assembly mounting damages is not identified, in certain circumstances can cause serious damage. In accidents where there was a large load on the vehicle, must be note - regardless of a measurement axes - in particular the following parts.

- Check the steering and the steering bar for the correct operation in relation of the steering angle, visual control of the cracks or tears.
- Check the chassis, all chassis components as arms, bumper, steering bar tips, stabilizer, aggregate supports, shaft body and their fasteners as cracks or tears.
- Check the wheels and tires for damage, unbalance and radial run. Inspect tires for cuts and edges in the profile, check the tire pressure.
- Check the engine mounts, transmission, shaft and exhaust system for damage.
- Finally, it should still be performed to test a trip after finishing the repair, it must ensure that the vehicle is safe in transit and can be delivered without any problem to the customer.

2.2 Body supply condition and individual parts for painting

Prior to the delivery of a repaired vehicle and individual parts for painting, repaired surface, and eventually levelled and untied should be prepared for painting with P 80 to 100 granulation sandpaper.

These preparations are tinker tasks and this point kept for the repair.

2.3 Alignment

Body and floor are made mainly with cold deformed deep drawing plates. For this reason, the malfunction deformation repair of an accident should be performed by the same method.

If the fault size prevents deformation repair against the accident direction, then the defective part must be removed only after aligning joint surfaces.

2.4 Cuts for removal

Cut for removal that have influence on the constructive stability of the body and thus on the vehicle transit reliability and safety, must be conducted according to the relevant information of the Repair Manual ⇒ Body Repairs; Rep gr. 50, Carroceria - Parte dianteira , 51 Carroceria - Parte central e 53 Carroceria - Parte traseira .

2.5 Body partial parts

By "partial parts" is meant as those (e g. back side panel) provided cut by the parts department

– Instead, you can create "partial parts" from whole pieces provided as spare parts Anyway, it should work exactly according to the procedures described and illustrated in the Repair Manual ⇒ Body Repairs; Rep. gr. 50; Carroceria - Parte dianteira , 51 Carroceria - Parte central e 53 Carroceria - Parte traseira .

- The use of "partial parts" as well as the manufacturing special means application influencing the times, manufacturing special means are especially linked in the repair description.

2.6 Original joint

Under "original joint" understand the welded joint that was applied in the vehicle manufacture

These weld joints should be performed again to repair the body

It is observed that in case of repair the amount of weld points can not be less than the standard

The different methods and processes of joint are described in the original Repair Manual ⇒ Body Repairs; Rep. gr. 50; Carroceria - Parte dianteira , 51 Carroceria - Parte central e 53 Carroceria - Parte traseira .

2.7 Body galvanized parts

Double-sided galvanized plates enable a high degree of protection against corrosion in the construction of a body. In case of repair to maintain the insurance against perforating corrosion, should be completed the work processes from the page.

> **WARNING**
>
> *During welding of galvanized steel plates, the vapours vented contains toxic zinc oxide. Because of this, there must be the desktop systems to ensure good ventilation and the removing of suitable exhaust vapours, e.g. the -V.A.G 1586- .*

2.8 Removing the residues

The damaged part of the body is cut roughly as identified on Repair Manual for example, the pneumatic saw - VAG 1523A- or - EQ 7415- , perforate the majority of spot welding joints or with the welding spots remover - VAG 1731- .

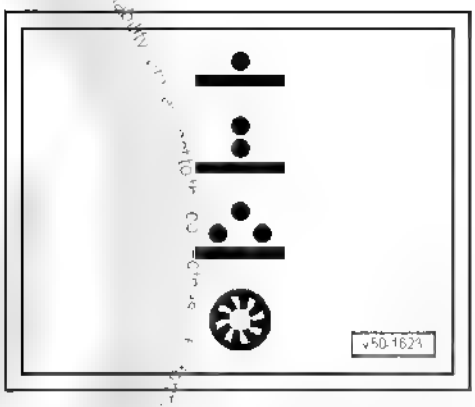
Also we recommend a straight trash and an angle trash to remove the solder joints that can not be removed with the solder points remover.

2.9 New parts

New parts after being installed cannot obtain access on the inside, such as the side panel must be painted internally on the respective vehicle colour prior to installation by aesthetic factor.

3 Symbols explanation

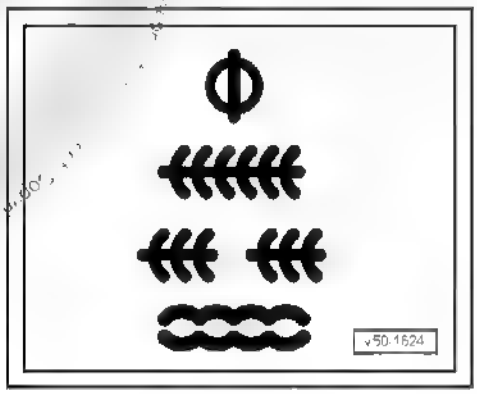
3.1 Symbols explanation to welding works



RP - stitch-spot (one row) - RP Spot welding (spot welding with a row)

RP - stitch-spot (two row) - RP Spot welding (spot welding with two row)

RP - stitch-spot (two misaligned rows) - RP Spot welding (spot welding displaced with two row)



SG - cap drop sewing - SG Hole welding (spot welding with MIG welding spots)

SG - lockstitch Sewing - SG projection welding (MIG welding).

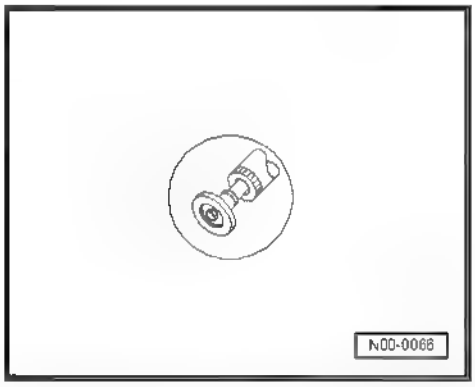
SG - continuous stitch - SG continuous welding (MIG bead welding).

SG - (discontinuous) stitch - SG continuous welding (discontinuous MIG bead welding).

Strong Weld - Welding brass.

3.2 Symbols explanation to work process

3.2.1 Sanding



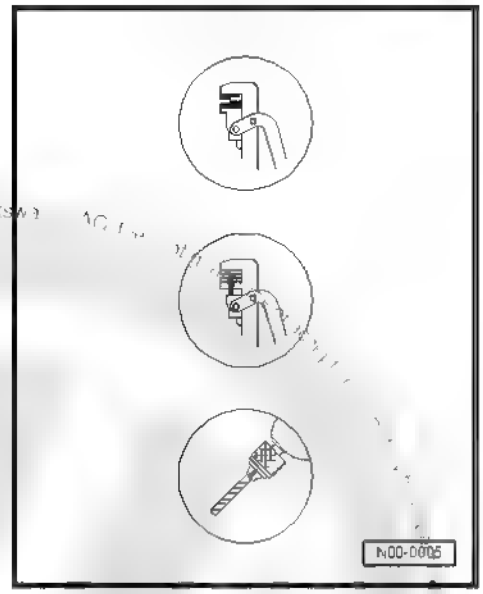
– To flatten the solder material layer with a sanding machine.

Note

Weld spots or beads must be sanded, so that the outer plate thickness is not reduced.

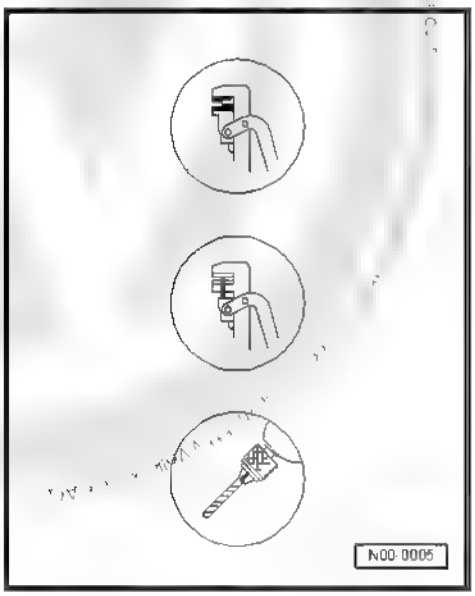
3.2.2 Lower

– To perform the overlay welding



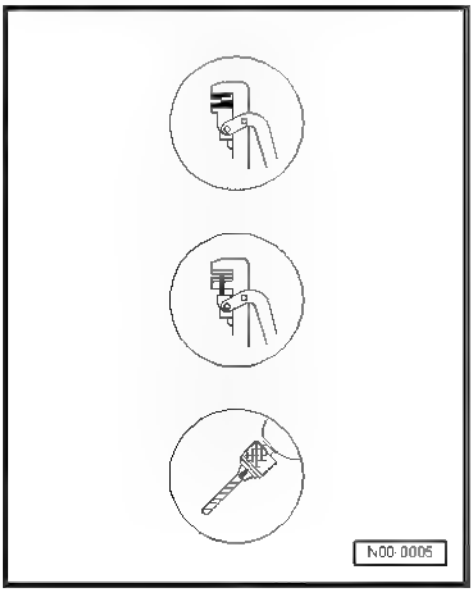
3.2.3 Drill

– To perform the spot welding with MIG weld.



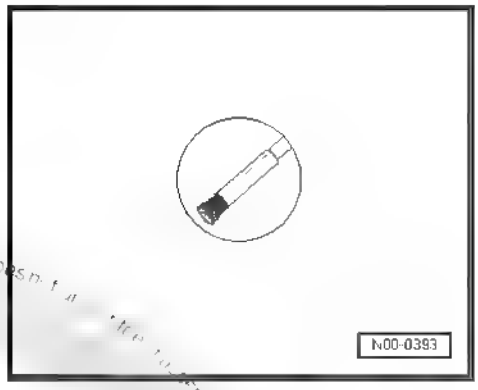
3.2.4 Pierce

– To perform a posterior spot welding with MIG weld or pierce weld spots (original joint).



3.2.5 Sanding

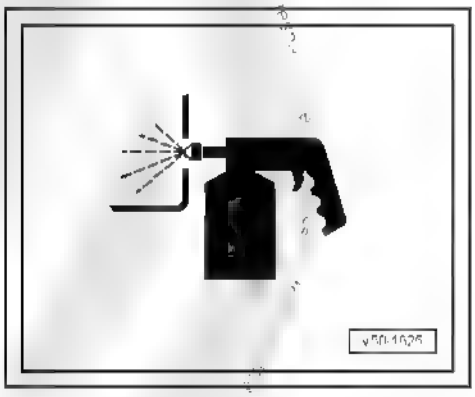
- Paint removal in areas of hindered access (e.g. internal roof frame) with a brush-type sweeper



3.2.6 Application of anti-corrosion fluid

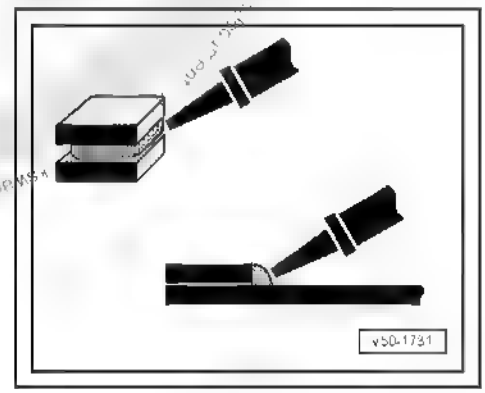
Application of anti-corrosion fluid is performed at the end of the repair process

⇒ Painting Manual; Rep. gr. 00 ; Anti-corrosion fluid application



3.2.7 Adhesion

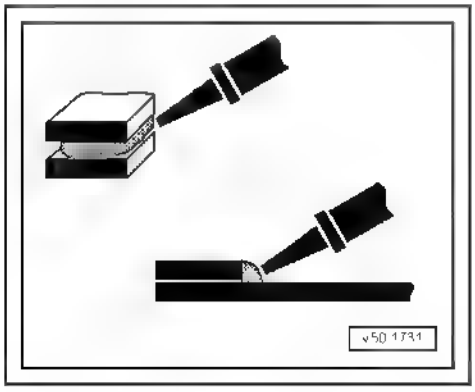
Many vehicles points are fixed by structural adhesives (Fox , Polo, Gol, Up!, and Golf) .



3.2.8 Sealing

⇒ Painting Manual; Rep. gr. 00 ; Sealing / Caulking

Whole body is sealed with the sealing compound and the adhesive beads to ensure no water ingress.

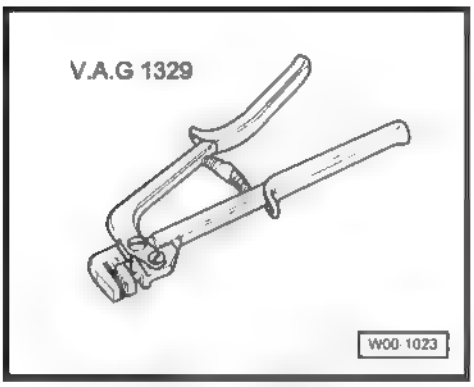


4 Tooling to the body repair

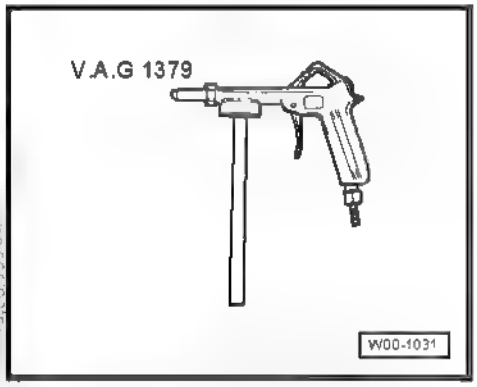
Note

The tools listed below are ranked according to figures VAG / VAS.

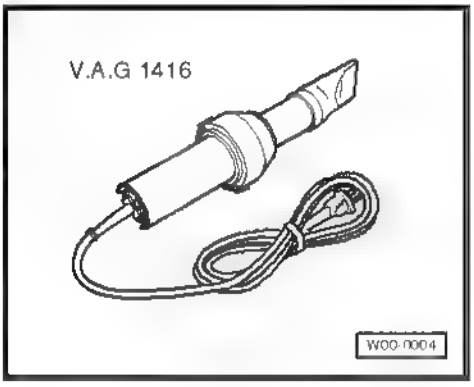
4.1 Hole plier - VAG 1329-



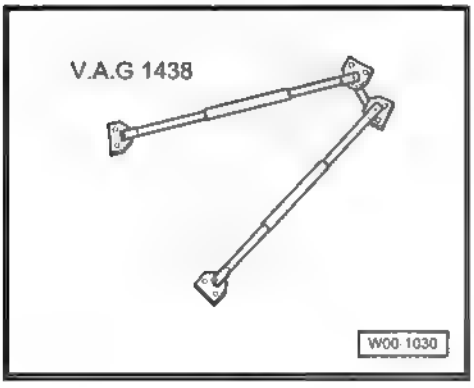
4.2 Fluid pulveriser - VAG 1379- or -EQ 7608-



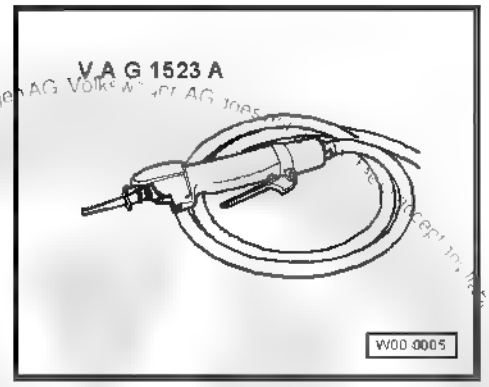
4.3 Hot air blower - VAG 1416-



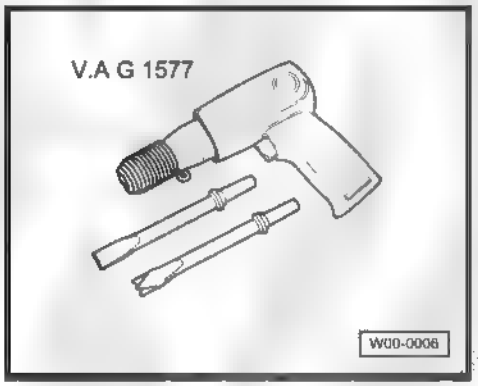
4.4 Adjustable straps - VAG 1438-



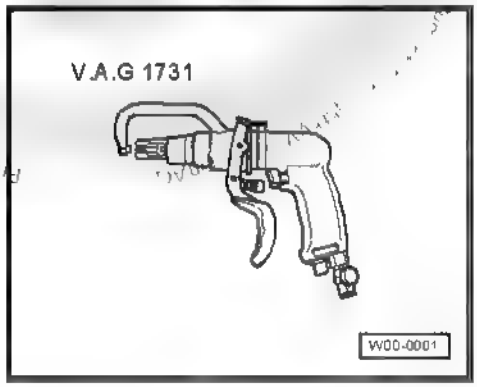
4.5 Pneumatic saw - VAG 1523A- or -EQ 7415-



4.6 Pneumatic hammer - VAG 1577-



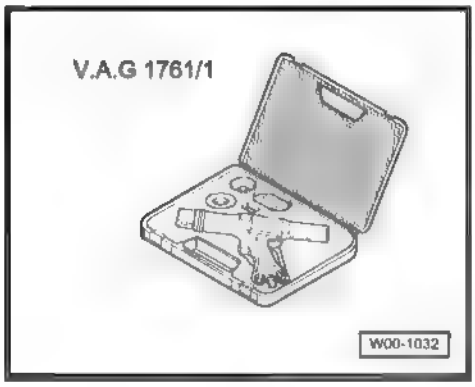
4.7 Welding points remover - VAG 1731-



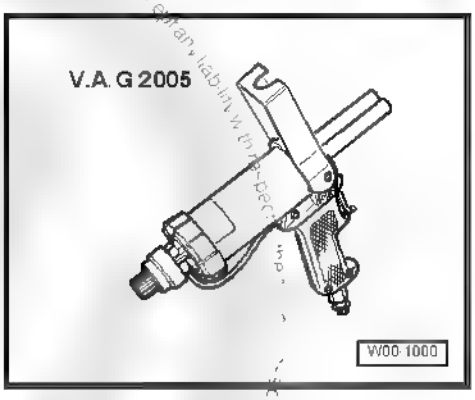
4.8 Adhesives Pneumatic Applicator for glass bonded - VAG 1761/1- or -EQ 7434-

Compressed air gun to create seals and protect the bottom floor with original optical.

In addition, all cartridges of 310 ml can be worked with this pistol.



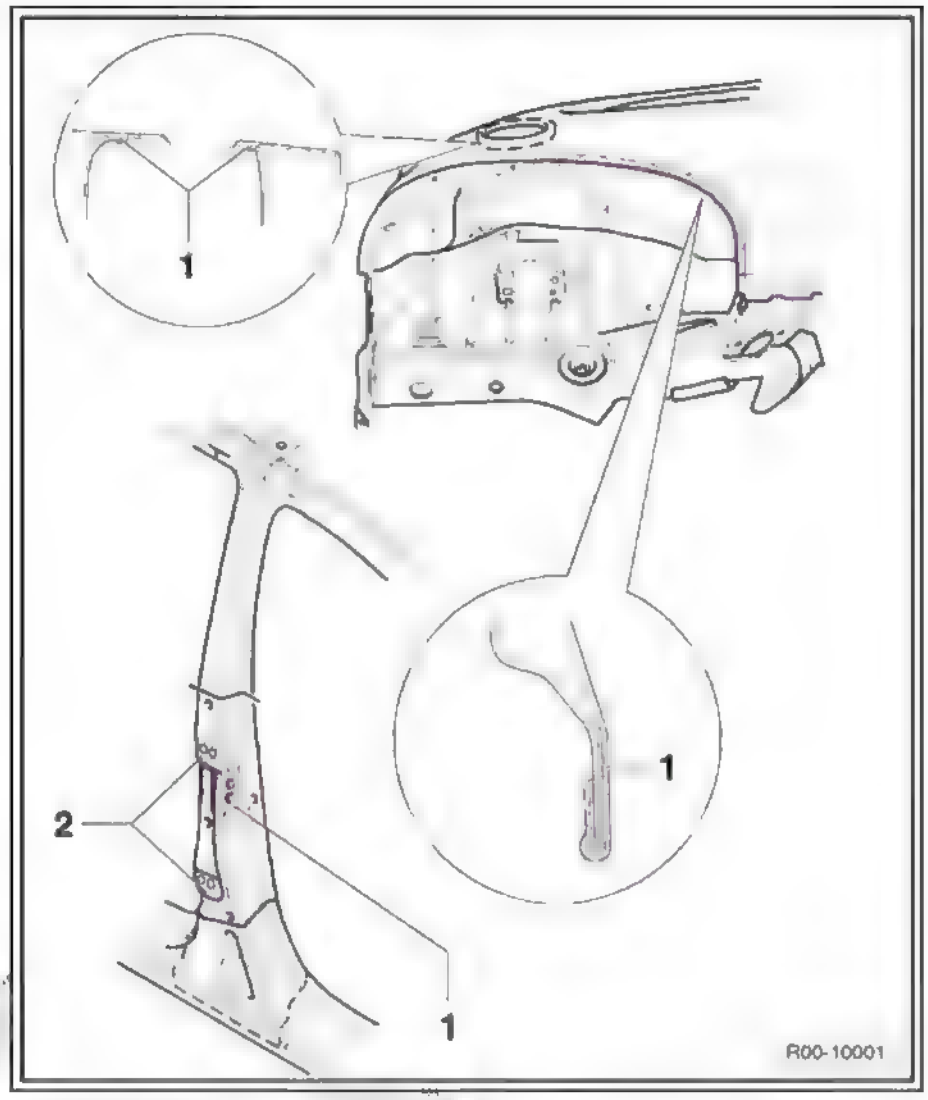
4.9 Pneumatic adhesive applicator - VAG 2005-



5 Glued joints of the body

1 - Gluing with structural adhesive - D 190 MKD A3-

2 - Gluing with structural adhesive - D 180 KD3 A2-



The following bonded joint work sequence is applied in case of repairs:

5.1 Removal procedure:

- Cut the adhesive bead with the adhesive electric cutter - bonded glass - VAG 1561A- .
- Remove the rest of adhesive with knife and scraper.

5.1.1 Bonding process:

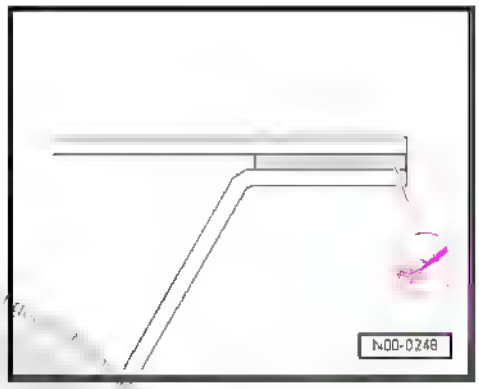
- Material: D 190 MKD A3
- Material: D 004 660 M2
- Material: D 180 003 M2
- Material: AKD 476 KD5 05.

- The measures in preparation for the gluing surfaces, as well as specific process information must be observed in the instructions of the repair adhesive.

5.2 Bonding types

To increase bodies hardness and strength are obtained from plant a greater number of glued joints with welding spots. They are distinguished as follows:

5.2.1 Resistance glued joints



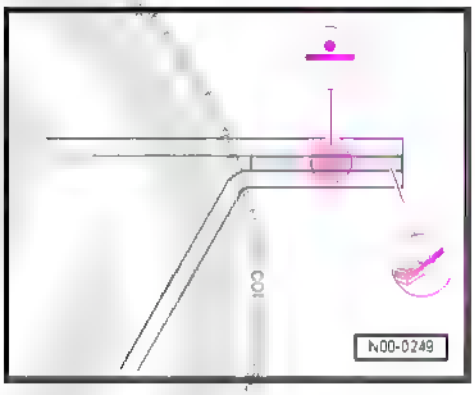
In glued joints, parts are joined together only by adhesive.

The distance between strength glued areas should not be less than 2 mm and not more than 4 mm. If necessary, prepare bonding areas.

Repair measurements

- The glued joints are made with the materials listed in the Repair Manual or in the spare parts catalogue.

5.2.2 Glued joints with solder points



In the solder joints glued with spot there is an electrical conductivity glue between the plates which allows performing welding without problems.

The distance between the bonding areas with spot welding should not be more than 1 mm. If necessary, prepare bonding areas.

In bonding with the spot solder, the welding current can not be increased. The pre-compression time will be prolonged due to displacement of the glue, approx. 30 to 50 periods. The gases produced must be aspirated.

5.3 Partial replacement repair solution

As a replacement to the adhesive with solder spot, use the adhesive - DA 001 730 A1- together with the pneumatic adhesive applicator - VAG 2005- .

When soldering and pasting both procedures are distinguished according to the type of welding (spot welding, MIG welding) as follows:

5.3.1 RP spot welding and bonding

In spot welding and gluing in repair case is replaced entire length of weld spots and gluing, as in serial production.

In welding problems, for example if a panel joint is replaced 3 supports only the outer panel, the welding spots of the repair must be welded on "old" solder points.

5.3.2 Welding SG and paste (if unable to welding spot)

If you do not have access to a bonding area with a welding RP device, the zone will be welded by SG-spot of MIG welding.

In this case, there applies the glue to maintain the quality of the weld. The distance between the SG-welding groove is 15 mm.

5.3.3 Gases aspiration from welding

In spot welding together with the spot welding adhesive is used the normal priming device, as in the welding processes of galvanized plates.

5.3.4 Preparations

The plates to be welded must be fitted before the application of the bead.

The bonding areas must be free, in the area of the weld, primer and adhesive residues, as well as dust and sealing compound.

Usual electroconductive ink application based on zinc is dispensed

With the adhesive displacement, the welding flange is coated by the adhesive, thus ensuring the corrosion protection.

5.3.5 Finishing works

- Cleaning excess adhesive.
- Protective measures against corrosion ⇒ page 21 .

6 Corrosion protection measures

6.1 Materials for corrosion protection prior to welding

6.1.1 Zinc-based conductive paint

Indication:

As corrosion protection of areas that are welded or inaccessible to others layers of paint.

Colour:

Grey

Drying time:

20 to 30 minutes in the air

> **WARNING**
>
> *The ink must be constantly stirred to prevent sedimentation.*

Suppliers	Reference	Address
Volkswagen	Zinc D 007 500 A2 spray	
Basf - Glasutit	5072 - Grey Glaco Zinc Solvent: 6500-0019	Glasurit resellers and representatives

6.2 Corrosion protection and special warranty against corrosion perforation

It is extremely important that during the repair an excellent surface preparation with the correct use of anti-corrosive primers (wash primer) and polyurethane primer is made before the application of covering paint, in order to maintain the special guarantee conditions against perforation due to corrosion.

The following vehicles have a special guarantee.

Bora - 12 years

Caravelle and Eurovan - 12 years

EOS - 12 years

Gol - 5 years

Golf - 12 years

Note

From the chassis 9BWAB41J0B4012731, the warranty is 6 years.

Jetta - 12 years

New Beetle - 12 years

Parati - 5 years

Polo - 5 years

Passat - 12 years

Saveiro - 3 years

Tiguan - 12 years

Touareg - 12 years

up! - 6 years

⇒ Painting Manual, Rep. gr. 00 ; Repainting ; Paint repair; Paint repair in steel plates and zinc-coated steel plates handles all processes to maintain this warranty after repairs bodywork.

7 Indications to residue disposal

7.1 Residue elimination

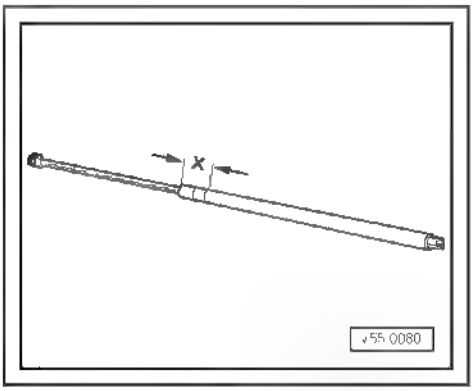
In order to recycle the components of a vehicle after having been repaired, the first step is to select recyclable materials.

This pre-selection should be made according to the following groups of subjects.

- Steel plate or iron materials ("scrap material") → junkyard and milling facilities.
- Aluminium → junkyard and milling facilities.
- Tyres → partial recycling.
- Plastic materials → polypropylene bumper and plastic materials recycling.
- Batteries → existing recycling done by the regional industrial waste collection entity.
- Used oil → existing disposal circuit.
- Brake fluid → material recycling.
- Coolant → material recycling.
- AC system gas → existing disposal circuit.
- AC system oil for R 12 systems → same as for AC system oil for R134a systems → recycling of the material in preparation.
- Shock absorber's fluid components, e.g., bumper damper → remove the oil and follow the existing disposal procedure.
- Shock absorber's fluid components, e.g., gas struts → remove the gas, collect the oil and then discard following the existing procedure.
- Separate waste foreign matter selected to enable reuse. For example, remove the wheels and tires for recycling route.

7.2 Support covers damper - unusable for disposal

- Fix the buffer zone at x = 50 mm in the vise.



WARNING

Fix the damper can only be done in this area, otherwise there is a danger of injury!

- Cut the cylinder of the damper in the first third of the total length of the cylinder, starting from the bead reference side of the piston rod

Note

- *Wear eye protection during the cutting process.*
- *Cover the cut area with a cloth to collect oil splashes.*
- *The oil and rags should be disposed*

7.3 Airbag

> ⚠ WARNING
>
> *The airbag unit of unexploded constitute a danger to turn into scrap.*

7.3.1 Disposal as waste

The pyrotechnical components:

- Safety belt with tensioner.
- Driver side airbag igniter - N95-
- Front passenger side airbag igniter 1 - N131-
- Driver side airbag trigger - N199-
- Passenger side airbag trigger - N200-

That have already been fired (ordnance) due to an accident, can be eliminated in the junkyard or through industrial waste.

8 Repair of steel plates

8.1 Plate body of high strength

Our vehicles are increasingly equipped with sheets of high strength. The fields of application of these plates can be found at ⇒ Body Repairs; Rep. gr. 00 ; Plate high strength body .

What is a high plate resistance?

Apparently a normal plate, but due to their different alloys has a yield higher than that of ordinary plates bodywork. That is, exerting the same force on the plate, the deformation "kneading" plate in high strength is not as deep as a common plate.

What to consider when undenting?

Untie operation is carried out with conventional tools. Due to the greater resistance to deformation exists a higher resistance, it will be necessary possibly apply more force. If the folds are untied, the material may break.

What should be taken into account when aligning with alignment platform or with hydraulic press?

Due to the increased strength of the plates is necessary to stretch more than a common plate before the plate is in the position desired. Due to the higher force distribution, although it is common to pass the plates with plates welded high strength, it is also necessary to apply more force. To prevent the common plate sag or gap, make an additional anchor.

⚠ WARNING

- *If the plate stretch excessively high strength, the length may be longer than desired!*
- *For safety reasons, as in ordinary plates, is also prohibited heating plates of high resistance to untie!*

What to consider when repainting?

If the high resistance plate heat very quickly due to the drying equipment, the plate stretches. If, however, the plate is joined to find reinforcement situated behind by means of welding or gluing points, these points arise wrinkles that remain visible after cooling. For this reason, the drying equipment should be slowly ramped to maximum power. Drying can be done in the drying cabin without any danger.

8.2 Parts of the galvanized body

8.2.1 Preparation

- Heat the sealing compound only with heat gun (max. 420 ° C) or remove with a wire brush or rotating.
- Remove ink and base material with a rotating plastic brush.

8.2.2 Cutting process

- If you can not perform thermal cutting processes (cutting torch) (coarse cuts only).

- To not damage the zinc layer into the cutting area, preferably perform mechanical cutting processes such as: milling cutter, body saw.

8.2.3 Joining techniques

Spot welding process (RP) causes a slight combustion of the zinc layer only in the centre of the spot weld. The protection ring zinc generated simultaneously around the spot weld protects against corrosion.

Whenever possible make the spot welding process (RP).

In spot welding process (RP) pay attention to different thickness of the zinc layer (perform a welding test).

Make the Mig welding process (SG) as a replacement of the spot welding process (RP), only if you can not perform another process.

Necessarily apply a coat of paint based on zinc bonding between the flanges.

8.3 Welding work on galvanized plates

WARNING

Once the galvanized steel plate welding causes toxic zinc oxide on fumes from the welding, it is necessary to ensure a good ventilation of the workplace, as well as the deviation of the combustion gases through suitable suction systems.

8.3.1 MIG Welding of galvanized plates

To ensure good quality of the MIG welding of galvanized plates:

→ SG Bore welding - spot welding with MIG weld spots

→ SG Projection welding - MIG weld

→ SG Continuous welding - MIG welding bead

→ SG Continuous welding - non-continuous MIG welding beads

Follow the indications below:

- The current intensity "amperage" of the welding transformer must be increased.
- At the same time, the advancement of the wire must be reset, since only the increase of the voltage causes only an arc greater (lesser penetration of the stitching more porous structure).
- Use cylindrical gas-jets rather than conical (the projection of liquid metal in a very narrow gas jet causes the formation of pores).
- Placing the burner about 12 mm above the product from a neutral position to weld an angular position of 10 °.
- The quality of the wire used should be as "mild" as possible.
- As gas may be used CO_2 or poor gas.

8.3.2 Bore welding of galvanized plates

To ensure good quality of the bore welding of galvanized plates:

→ RP Spot welding - spot welds in a single row

→ RP Spot welding - spot welds in a double row

→ RP Spot welding - two rows with alternated spot welded spots

Follow the indications below:

Welding transformer

- Increasing the current intensity - "amperage" - 10% to a maximum of 30%.

In welding transformers with "adjustment of the welding time" is convenient to extend the welding time.

- Extension of welding time (benchmarks) plate size:
- 0.6 mm - at least 7 periods
- 0.8 mm - at least 9 periods
- 1.0 mm - at least 11 periods

The welding time is correctly selected when you can make welding points without liquid metal projection.

Needle electrode

- Using electrodes of copper (copper-chromium-zirconium) with high heat resistance (> 400 ° C).
- Regularly clean the copper electrodes or laterally rectify the diameter of the 4 mm ∅ contact surface.
- Increasing the pressure force of the electrodes.

8.3.3 Posting test

The best results of welding are obtained by test plate welding in conjunction with the deployment test.

In this operation, the narrow strip is unwound test welded or torn the second sheet metal strip force acting vertically on the surface of the plate.

The solder points are not good quality ripped from the contact surface, but "posted".

8.4 Repair body shop where there is no paint damage (Paintless dent repair)

The repair of body where the paint has not been affected, can be repaired with the use of specific equipment for this purpose.

EQ 7442 - Bodywork Untie Device

Repairing small and medium dents without damaging the original paint of the vehicle, avoiding repainting the affected region.

Connectors in various sizes to suit the various types of small and medium dents.

The connectors act pasted in the affected region, allowing their removal and reuse later.

EQ 7443 - Mini Lifter

Repairs "micro" dents (located dents, for example, resulting from hailstorm) without damaging the original paint of the vehicle, thus preventing repainting of the affected region.